2011 ILAR JOURNAL REVIEW

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- All information is deemed reliable and correct
- No information presented is known to be specifically included in ACLAM Board Examinations

Volume 52: 1

Animal Models of Aging: Something Old, Something New

Which of the following is an alternative to rats and mice for aging studies because it lives 10 times longer?

a. *Myocaster coypus*
b. *Graphiurius killeni*
c. *Chinchilla laniger*
d. *Heterocephalus glaber*

Which of the following is a an alternative to rats and mice for aging studies because it lives 10 times longer?

a. *Myocaster coypus* (nutria)
b. *Graphiurus kelleni* (African dormice)
c. *Chinchilla laniger* (Chinchilla)
d. *Heterocephalus glaber* (Naked mole rat)

"Animals Models of Aging Something Old, Something New"

Recombinant inbred definition:

a. Repeated backcross of mutation-bearing mice for 10 or more generations
b. Nonsibling matings from an F2 of a cross between two inbred strains
c. Mice from crosses between inbred strains
d. Brother-sister matings for > 20 generations after crossing two inbred strains and their F1 to obtain an F2

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Bluebook

F1 hybrid definition:

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"Heterogeneous Stocks and Selective Breeding in Aging Research"

Advanced intercross line:

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Blue book

The main impetus behind the development of the _____was to overcome the limitations of existing RI panels and to create the first genetic reference population suitable for systems approaches for biomedical research.

a. Collaborative Cross
b. Multifactorial Cross
c. Systematic Cross
d. Recombinant Cross

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"The Collaborative Cross: A Recombinant Inbred Mouse Population for the Systems Genetic Era"

The Collaborative Cross was derived from ___ genetically diverse inbred strains.

a. 5
b. 8
c. 11
d. 14

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"The Collaborative Cross: A Recombinant Inbred Mouse Population for the Systems Genetic Era"

All of the following are options for aging rats that are genetically defined and are available under the National Institute of Aging Program except:

a. Sprague Dawley
b. F344
c. Brown Norway
d. F1 hybrid of F344 x BN strains

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"Mindspan: Lessons from Rat Models of Neurocognitive Aging"

What family does the naked mole rat belong to?

a. Sentrae
b. Glaberae
c. Bathyergidae
d. Costricidae

"Successful Aging and Sustained Good health in the Naked Mole Rat: A Long-Lived Mammalian Model for Biogerontology and Biomedical Research"

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"Successful Aging and Sustained Good health in the Naked Mole Rat: A Long-Lived Mammalian Model for Biogerontology and Biomedical Research"

Which of the following exhibit eusocialism? Select all that apply.

a. Bees
b. Ants
c. Termites
d. Naked Mole Rat

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"Successful Aging and Sustained Good health in the Naked Mole Rat: A Long-Lived Mammalian Model for Biogerontology and Biomedical Research"

Naked Mole Rats are good models for aging studies for the following reasons except:

a. NMR's show little pathology in kidneys of aged animals
b. NMR's show no apparent age-related decline in cognitive function
c. NMR's have not shown spontaneous neoplasia
d. NMR's show no evidence of heart disease in aged animals

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"Successful Aging and Sustained Good Health in the Naked Mole Rat: A long-Lived Mammalian Model for Biogerontology and Biomedical Research"

Calorie restriction can be safely implemented at levels of ____% for periods of decades in adult monkeys as proven in the current National Institute of Aging Studies of the NIH and the University of Wisconsin Madison.

a. 10-15%
b. 15-20%
c. 20-30%
d. 30-40%

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"Calorie Restriction and Aging in Nonhuman Primates"

_____ the most abundant steroid hormone in the blood of primates, progressively declines during adulthood, however, calorie restriction slows the rate of decline.

a. Dehydroepiandrosterone
b. Testosterone
c. Dihydrotestosterone
d. Estradiol

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"Calorie Restriction and Aging in Nonhuman Primates"

The following are limitations to the use of birds in aging research (select all that apply):

a. Difficulty in handling
b. Difficulty in genetic manipulation
c. Scarcity of bird species that are truly short-lived
d. Duplicate telomeres

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"Candidate Bird Species for Use in Aging Research"

The chicken is not an ideal avian model for aging research studies for the following reasons except?

a. They are too large
b. They have been extensively modified by genetic selection for growth rate
c. They are resistant to cancer
d. Their longevity is undefined

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All of the following avian species show exceptional promise as models for aging research except:

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b. *Melopsittacus undulatus*
c. *Serinus canaria*
d. *Taeniopygia gutata*

All of the following avian species show exceptional promise as models for aging research except:

a. *Anas platyrhyncos* (Duck)
b. *Melopsittacus undulatus* (Budgerigar)
c. *Serinus canaria* (Canary)
d. *Taeniopygia gutata* (Zebra finch)

" Candidate Bird Species for Use in Aging Research"

What is the average weight of an adult marmoset?

a. 100-200 g
b. 250-350 g
c. 350-400 g
d. 450-500 g

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"The Marmoset as a Model of Aging and Age-Related Diseases"

Which of the following NHP's do not exhibit lactational anovulation?

a. *Cebus apella*
b. *Pitechia saki*
c. *Chlorocebus aethiops*
d. *Callithrix jachus*

Which is the only NHP that does not exhibit lactational anovulation

a. *Cebus apella* (capuchin)
b. *Pitechia saki* (white faced saki)
c. *Chlorocebus aethiops* (African green)
d. *Callithrix jachus*

"The Marmoset as a Model of Aging and Age-Related Diseases"

Induction with the following compound can cause Parkinsonian like symptoms in humans:

a. 1- methyl-4-phenol- 1,2,4,6 tetrahydropyridine
b. 1-methyl-4-phenyl- 1,2,4,6 tetrahydropyridine
c. 1-methyl-4-phenyl- 1,2,3,6 tetrahydropyridine
d. 1-methyl-3 phenyl- 1,2,3, 6 tetrahydropyridine

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"The Marmoset as a Model of Aging and Age-Related Diseases"

All of the following have been suggested for use in aging studies except:

a. 
c. 
b. 
d. 

All of the following have been suggested for use in aging studies except:

African dormouse

Name the others:

Galago senegalensis (bush baby)

Name this one:

Microcebus murinus (Grey mouse lemur)

And this one:

Callithrix jachus

What is the shortest-lived bird species:

a. *Coturnix coturnix*
b. *Meleagris gallopavo*
c. *Gallus gallus*
d. *Nymphicus hollandicus*

What is the shortest-lived bird species:

a. *Coturnix coturnix* (Japanese quail)
b. *Meleagris gallopavo* (turkey)
c. *Gallus gallus* (chicken)
d. *Nymphicus hollandicus* (cockatiel)

"Candidate Bird Species for Use in Aging Research"

Volume 52: 2

Spineless Wonders: Welfare and Use of Invertebrates in the Laboratory and Classroom

Which invertebrate has served as a model for Parkinson's, Alzheimer's, and Huntington's disease:

a. *Drosophila melanogaster*
b. *Ciona intestinalis*
c. *Caenorhabditis elegans*
d. *Asterias forbessii*

Which invertebrate has served as a model for Parkinson's, Alzheimer's, and Huntington's disease:

a. *Drosophila melanogaster* (fruit fly)
b. *Ciona intestinalis* (sea squirt)
c. *Caenorhabditis elegans* (nematode)
d. *Asterias forbessii* (starfish)

"Invertebrate Models for Biomedical Research, Testing, and Education"

Which of the following serves as an excellent model of cardiac development and disease?

a. *Drosophila melanogaster*
b. *Caenorhabditis elegans*
c. *Dissosteira carolina*
d. *Nemastostella vectensis*

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"Invertebrate Models for Biomedical Research, Testing, and Education"

Which of the following has been used in Pavlovian conditioning studies?

a. *Loligo pealei*
b. *Limulus polyphemus*
c. *Pontobdella muricata*
d. *Nautilus pomilius*

Which of the following has been used in Pavlovian conditioning studies?

a. *Loligo pealei* (long finned squid)
b. *Limulus polyphemus* (horseshoe crab)
c. *Pontobdella muricata* (leech)
d. *Nautilus pomilius* (chambered nautilus)

"Invertebrate Models for Biomedical Research, Testing, and Education"

Which of the following is an excellent model for vision research?

a. *Loligo pealei* (long finned squid)
b. *Limulus polyphemus* (horseshoe crab)
c. *Pontobdella muricata* (leech)
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"Invertebrate Models for Biomedical Research, Testing, and Education"

What is the Neimann-Pick type C?

A taupathy in which an overabundance of free cholesterol in the brain leads to neurodegeneration

Which of the following invertebrates is contributing to knowledge of Niemann-Pick type C?

a. *Drosophila melanogaster*
b. *Aplysia californica*
c. *Apis mellifera*
d. *Pontobdella muricata*

Which of the following invertebrates is contributing to knowledge of Niemann-Pick type C (a taupathy in which an overabundance of free cholesterol in the brain leads to neurodegeneration:

a. *Drosophila melanogaster*
b. *Aplysia californica* (sea slug)
c. *Apis mellifera* (honeybee)
d. *Pontobdella muricata* (leech)

"Invertebrate Models for Biomedical Research, Testing, and Education"

Which of the following is located in the antenna of Drosophila and is the counterpart of the mammalian ear:

a. Organ of Corti
b. Foramen of Panizzi
c. Johnson's Organ
d. Eustachian eustachi

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"Invertebrate Models for Biomedical Research, Testing, and Education"

All of the following invertebrates can produce bioluminescence except:

a. *Photinus pyralis* (firefly)
b. *Renilla reniformis* (sea pansy)
c. *Aequorea victoria* (jellyfish)
d. *Hirudo medicinalis* (leech)

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"Invertebrate Models for Biomedical Research, Testing, and Education"

The limulus amebocyte lysate is widely used to detect the following in medical devices, implants, and vaccines:

a. Spore levels
b. Endotoxins
c. Viral contamination
d. ph levels

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d. pH levels

"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

How can you treat bacterial contamination when maintaining stock of *C. elegans*?

a. Chloroform
b. 5% Hypochlorite
c. Phenol
d. 2% Sodium chloride

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"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

How often should *Aplysia californica* be fed?

How often should *Aplysia californica* be fed?

They should be fed to satiation every 3 days.

"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

Define Biomimetics:

Define Biomimetics:

The study of a living organism to create a device, either medical or nonmedical, by applying information gained from the organism.

"Invertebrate Models for Biomedical Research, Testing, and Education"

Humane and rapid euthanasia is possible in *Limulus polyphemus* with the injection of 1 to 2 ml of blood in which area:

a. Ventral cardiac sinus
b. Dorsal cardiac sinus
c. Femoral vein
d. Brain

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"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

All of the following invertebrates are semelparous (grow rapidly to sexual maturity, spawn once, and die) except:

a. Octopus
b. Hermit crabs
c. Cuttlefish
d. Squid

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b. Hermit crabs
c. Cuttlefish
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"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

What is the most common health problem seen in horseshoe crabs?

What is the most common health problem seen in horseshoe crabs?

Lesions of the shell due to external pathogens. Usually evident in discoloration or erosion of the carapace.

"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

What is the anesthetic agent of choice for cephalopods.

What is the anesthetic agent of choice for cephalopods.

Magnesium chloride.

"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

Why is it critical that dosage and time of exposure of antibiotic water treated baths be monitored carefully?

Why is it critical that dosage and time of exposure of antibiotic water treated baths be monitored carefully in cephalopods?

Cephalopod skin is just 1 cell layer thick and it is easy to overdose them.

"Culture and Maintenance of Selected Invertebrates in the Laboratory and Classroom"

What is the crustacean stress hormone called?

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a. Crustacean Epinephrine
b. Crustacean Norepinephrine
c. Crustacean hypoglycemic hormone
d. Crusacean cortisol

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"Pain and Suffering in Invertebrates"

As defined by the International Association for the Study of Pain, increased pain sensitivity occurs in the form of:

a. hyperalgesia
b. allodynia
c. hypertension
d. hyperactivity

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b. allodynia
c. hypertension
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"Pain and Suffering in Invertebrates"

What must Benzocaine be dissolved in to make it more soluble in water?

a. Sodium Chloride
b. Ammonia
c. Magnesium Salts
d. Acetone

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d. Acetone

"Anesthesia, analgesia, and Euthanasia of Invertebrates"

What is a method of assessing depth of anesthesia in invertebrates?

a. Deep body pinch
b. Loss of righting reflex
c. ph changes
d. no method of assessing anesthetic depth exists

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a. Deep body pinch
b. Loss of righting reflex
c. ph changes
d. no method of assessing anesthetic depth exists

"Anesthesia, analgesia, and Euthanasia of Invertebrates"

Failure to show signs of anesthetic recovery in invertebrates after ___ hrs is a clear indication of death.

a. 3 hrs
b. 6 hrs
c. 9 hrs
d. 12 hrs

After ___ hrs of not showing signs of anesthetic recovery in invertebrates (with rigor mortis), this is a clear indication of death.

a. 3 hrs
b. 6 hrs
c. 9 hrs
d. 12 hrs

"Anesthesia, analgesia, and Euthanasia of Invertebrates"

Volume 52:3

Animal Models of Drug Addictions: High Hopes for Therapeutic Treatments

Ketamine simulates the symptoms of which of the following:

a. Parkinson's
b. Schizophrenia
c. Epilepsy
d. Globoid Cell Leukodystrophy

"Animal Models of Drug Addiction in Support of Novel Therapeutic Strategies"

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a. Parkinson's
b. Schizophrenia
c. Epilepsy
d. Globoid Cell Leukodystrophy

"Animal Models of Drug Addiction in Support of Novel Therapeutic Strategies"

What mechanism of action does Ketamine exhibit:

a. AMPA agonist
b. GABA antagonist
c. NMDA antagonist
d. Kainate agonist

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a. AMPA agonist
b. GABA antagonist
c. NMDA antagonist
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Rats faced with the choice between cocaine and an alternative nondrug reward, most of them:

a. Took the non-drug reward
b. Took the cocaine

Rats faced with the choice between cocaine and an alternative nondrug reward most of them

a. Took the non-drug reward
b. Took the cocaine

"Cracking the Molecular Code of Cocaine Addiction"

The majority of studies of cocaine addiction use what animal species:

a. Dogs
b. Cats
c. Rats
d. Mice

The majority of studies of cocaine addiction use what animal species:

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b. Cats
c. Rats
d. Mice

"Cracking the Molecular Code of Cocaine Addiction"

Narp, an immediate early gene, mediates the long-term effects of drugs of abuse. What does Narp stand for:

a. Neuronal activity-regulated pentraxin
b. Neuronal associated regulation piece
c. Neuronal appendix receiver potentiation
d. Neuronal assisted regulator position

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"Mediating the Effects of Drug Abuse: The Role of Narp in Synaptic Plasticity"

In terms of overall rates of protein synthesis in the brain, birth in the human would be equivalent to what age in a rat:

a. Birth in a rat
b. 7 days
c. 13 days
d. 21-25 days

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b. 7 days
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d. 21-25 days

"Changing Mechanisms of Opiate Tolerance and Withdrawal during Early Development: Animal Models of the Human Experience"

What major receptor type is involved in opiate withdrawal in rat pups less than a week old:

a. delta
b. kappa
c. mu

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a. delta
b. kappa
c. Mu

"Changing Mechanisms of Opiate Tolerance and Withdrawal during Early Development: Animal Models of the Human Experience"

Morphine's action is a mu _____ and kappa _____

a. agonist; antagonist
b. antagonist; agonist
c. agonist; antagonist
d. agonist; agonist

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a. agonist; antagonist
b. antagonist; agonist
c. agonist; antagonist
d. agonist; agonist

"Changing Mechanisms of Opiate Tolerance and Withdrawal during Early Development: Animal Models of the Human Experience"

Morphine side effects include all of the following except:

a. Respiratory depression
b. Nausea
c. Decreased biliary tract pressure
d. Urinary retention

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a. Respiratory depression
b. Nausea
c. Decreased biliary tract pressure
d. Urinary retention

"Anesthesia and Analgesia in Laboratory Animals, 2nd Ed, p. 112"

Which receptor is instrumental in opioid dependence behaviors, including the opioid withdrawal response;

a. NMDA
b. Kainate
c. Glycine
d. GABA

Which receptor is instrumental in opioid dependence behaviors, including the opioid withdrawal response;

a. NMDA
b. Kainate
c. Glycine
d. GABA

"Opioid Dependence and NMDA Receptors"

All of the following are acute opioid withdrawal symptoms in rodent models except:

a. Wet dog shakes
b. Hypertension
c. Hyperalgesia
d. Hypoventilation

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"Opioid Dependence and NMDA Receptors"

Mice lacking the _____ gene are resistant to Meth toxicity.

a. Glutamate dismutase
b. Nitric oxide synthase
c. Lactic acetate
d. Methyl transcriptase

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"Nucleus Accumbens Invulnerability to Methamphetamine Neurotoxicity"

A recent study showed that Meth-induced inflammation and neuronal dysfunction were preventable by treating with:

a. Meloxicam
b. Banamine
c. Carprofen
d. Indomethacin

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"Nucleus Accumbens Invulnerability to Methamphetamine Neurotoxicity"

What schedule does Ketamine belong to:

a. Schedule 1
b. Schedule 2
c. Schedule 3
d. Schedule 4

What classs schedule does Ketamine belong to:

a. Schedule 1
b. Schedule 2
c. Schedule 3
d. Schedule 4

"The Neurobehavioral Pharmacology of Ketamine: Implications for Drug Abuse, Addiction, and Psychiatric Disorders"

All protocols that use food regulation should include all the following:

a. A plan for monitoring vitals
b. A plan for monitoring body weight
c. Justification for the level and duration of restriction
d. A description of how the restriction will be arranged
e. Whether individual housing is required

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c. Justification for the level and duration of restriction
d. A description of how the restriction will be arranged
e. Whether individual housing is required

"IACUC perspective on drug addiction research"

Environmental enrichment can (select all that apply)

a. Alter behavioral results in studies of psychoactive drugs
b. Alter neurochemical results in studies of psychoactive drugs
c. Have no effect on psychoactive drug studies

Environmental enrichment can (select all that apply)

a. Alter behavioral results in studies of psychoactive drugs
b. Alter neurochemical results in studies of psychoactive drugs
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"IACUCU perspective on drug addiction research"

What NHP model most specifically mimics human transmissible spongiform encephalopathy (TSE)?

a. *Macaca radiata*
b. *Saimiri boliviensis*
c. *Pan troglodytes*
d. *Sanguinus oedipus*

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d. *Sanguinus oedipus*

"Workshop Summary: Neotropical Primates in Biomedical Research"

Good Luck!!